



November 9, 2007

Washington State Department of Ecology
4601 N Monroe, Ste. 202
Spokane, WA 99205-1295

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DEPARTMENT OF ECOLOGY
EASTERN REGIONAL OFFICE

Attn: Permit Coordinator

Dear Permit Coordinator:

Liberty Lake Sewer and Water District has reviewed the Draft NPDES Waste Discharge Permit No. WA-0045144 dated 9/4/2007. From our review we have the following comments:

NPDES Permit

Page 1 of 43;

1. Name of permittee should be Liberty Lake Sewer and Water District.

Page 2 of 43;

2. Typo – "Summary".
3. Table of contents is missing; subsection "G. Other Non-Compliance Reporting".

Page 5 of 43;

4. Typo – "Summary".

Page 6 of 43;

5. Average weekly loading for TSS appears to be incorrect.
6. Maximum daily loading for BOD appears to be incorrect.
7. Limits in permit are incorrect. Calculations for determining effluent limits for metals and a memo describing the methodology used to determine those limits are attached.

Page 7 of 43;

8. Average weekly loading for TSS appears to be incorrect.
9. Maximum daily loading for BOD appears to be incorrect.
10. See Comment 7 for lead and zinc limits.

Page 8 of 43;

11. Same comments as 8, 9, and 10 above.

Page 9 of 43;

12. The test frequencies and detection limits required in the draft NPDES permit for; PBDE, PCBs, AND 2, 3,7,8 ICDD will result in outside lab costs of \$25,300 per year. This is nearly the entire lab testing cost for the entire of 2006 year. The only "accredited lab" that the District could find capable of doing these tests is located in Minneapolis. The costs shown do not include shipping costs to the lab (overnight). This lab may not be accredited for all required tests.

This is an enormous additional cost for the District. Costs for this testing could be significantly reduced if the detection limit was raised to ug/L and the required frequency was reduced.

Page 10 of 43;

13. Continuous temperature monitoring in two locations in the river will be very problematic. This section of the river experiences significant fluctuations in water level. A temperature sensor would need to be installed in the main channel to measure low flow temperatures. During high flows the river moves heavy debris and large rock. It is doubtful that a sensor could be installed such that it would remain undamaged. There are no structures immediately upstream of the discharge point or 300 feet below the discharge point on which to attach the sensor. Page 18 of the Fact Sheet states that effluent temperature monitoring through 2006 indicates that temperature of the effluent may actually cool the receiving water during critical river flow conditions. Temperature readings from the effluent support not monitoring river temperatures either side of the discharge point.

Page 14 of 43;

14. The design criteria for Annual Average TSS is shown incorrectly, should be 4,390 lbs/day

Page 16 of 43;

15. With the upgrades to the treatment plant providing the required phosphorous removal, references to the 0.895 MGD and phosphorous removal requirements should be eliminated.

Page 31 of 43;

16. Since the District's Facilities Plan was completed in 2001, the District requests that the technology selection for achieving 50 ug/L, final (phase 2) effluent limitations, water reclamation, and a hydrogeological analysis be completed as our Addendum to the 2001 Plan.
17. The compliance schedule is very aggressive. The District just completed a very large treatment plant upgrade that dramatically improved effluent quality. We intend to do pilot testing on the plant starting in January 2008. Pilot testing and data analysis is anticipated to take approximately 6 months. The treatment plant upgrades are just now showing stable results, so the actual performance ability will be more defined over the next year. The District plans to research the feasibility of providing reclaimed water to local golf courses, parks, freeway right of way landscaping and other irrigation purposes. The evaluation and feasibility study is anticipated to take 8 to 12 months to complete. The outcome will have an impact on what type of improvements will be made to the treatment plant and the method in which the District will meet phase 1 and phase 2 treatment requirements.

To complete this work the District requests that the compliance schedule be modified to allow completion of the Project Manual (P,S,&E) by October 1, 2012, and Completion of Wastewater Treatment Plant Construction by December 31, 2014.

Page 32 of 43;

18. The District intends to proceed with pilot testing one or more filtration / membrane systems for the purpose of selecting a technology to meet phase 1 phosphorous limits. Since the initial intent of this testing is not to support the development of reclaimed water, we assume the engineering report discussed in Condition S11 A is not required for this testing

FACT SHEET

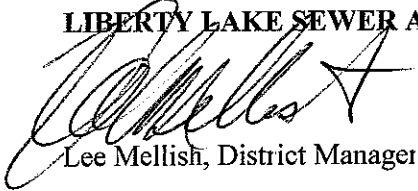
Page 19 of 45;

19. States that calculations for determining limits for cadmium, lead, and zinc are shown in Appendix C. There are no such calculations in Appendix C.

This concludes our comments on the NPDES Waste Discharge Permit. Please call with any questions regarding our comments.

Sincerely,

LIBERTY LAKE SEWER AND WATER DISTRICT

A handwritten signature in black ink, appearing to read 'Lee Mellish', is written over the printed name.

Lee Mellish, District Manager

c Dennis Fuller, CWEC
 Larry Esvelt, Esvelt Environmental Engineering
 LLSWD Commissioners



Water Quality & Treatment / Wastewater Treatment studies, Design, Operation / Industrial Wastewater Management
ESVELT ENVIRONMENTAL ENGINEERING
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Mr. Lee Mellish
Liberty Lake Sewer and Water District
22510 E. Mission
Spokane, WA 99019

November 9, 2007

Dear Mr. Mellish:

Thank you for providing us with the opportunity to comment on your draft NPDES permit Number WA-0045144. We share your concern regarding the proposed limits for lead and zinc presented in the draft permit. We looked closely at this issue and have concluded that the limits in the draft permit are inappropriate, and a request for revisions should be made. Proposed revisions to the permit limitations for these metals are presented below.

**Table 1. Recommended Effluent Limitations for Zinc and Lead,
Liberty Lake Wastewater Treatment Plant.**

Parameter	EFFLUENT LIMITATIONS: OUTFALL #001	
	Average Monthly	Maximum Daily
Lead (Total Recoverable)	2.8 µg/L	4.6 µg/L
Zinc (Total Recoverable)	121 µg/L	152 µg/L

These recommended limits are based on meeting aquatic life criteria at effluent hardness at end-of-pipe. A comparison of the recommended Table 1 limits to the performance-based plus 10% potential limits found the above limits to be the more restrictive.

The performance analysis revealed that the effluent values for lead have exceeded the recommended Table 1 average monthly limit on several occasions, but have not exceeded the maximum daily limit. It appears the language in the draft permit would make these instances violations, since the sampling frequency does not exceed once per month. It is recommended the district request that the lead limitation be removed from the interim phase 1 and interim phase 2 limitations listed in the draft permit, but remain in the final effluent limitations. This would reduce the likelihood of violations in the interim, and when the final limitations take effect, effluent lead concentration will reflect any changes due to implementation of additional treatment for phosphorus reduction.

The Fact Sheet with the draft NPDES permit discusses metals beginning on page 18 of 45. We agree with Ecology's statement that the limits for lead and zinc in the permit should be the more restrictive of:

- Potential limits based on meeting aquatic life criteria at effluent hardness at end-of-pipe, or
- Potential limits, plus 10%, based on maintaining existing concentrations of metals in the effluent, where adequate data exist (i.e. performance-based limits).

This fact sheet statement is consistent with the Spokane River metals TMDL, as outlined in *Cadmium, Lead, and Zinc in the Spokane River, Recommendations for Total Maximum Daily Loads and Waste Load Allocations*, September, 1998, Publication No. 98-329.

The fact sheet does not state which of the above potential limits were found to be most restrictive and incorporated into the permit. Additionally, the calculations to derive the limits were missing from Appendix C, so it was not possible to check the calculations to determine if the data and input parameters used in determining limits were consistent with the District's records.

Our analysis is detailed below, for both methods of determining potential limits.

- A. Aquatic life criteria at effluent hardness at end-of-pipe was determined by following the spreadsheet method detailed in *Cadmium, Lead, and Zinc in the Spokane River, Recommendations for Total Maximum Daily Loads and Waste Load Allocations*, September, 1998, Publication No. 98-329. The spreadsheet is presented below. In our analysis, we concur that there does not need to be a cadmium limit according to department of Ecology "reasonable potential to exceed" criteria.

Table 2. Aquatic Life Criteria Calculation

From Appendix F and Appendix G in Ecology publication 98-329			
Cadmium, Lead, and Zinc in the Spokane River			
Recommendations for total maximum daily loads and waste load allocations			
	Cd	Pb	Zn
1. Effluent Hardness	103	103	103
2. Chronic aquatic life criteria for dissolved metals (µg/l)	1.05	2.39	107.16
3. Ratio of total recoverable / dissolved metals	1.10	--	1.01
4. Chronic aquatic life criteria for total recoverable metals (µg/l)	1.16	2.58	109
5. Number of samples (n2) required pr month for compliance monitoring	1	1	1
6. Coefficient of variation for effluent metals	0.78	0.88	0.34
7. Calculated limits using the equations in Box 5-2 of the 1991 TSD			
Z statistic for water quality-based LTA derivation (99%ile):	2.3263	2.3263	2.3263
Z statistic for water quality-based daily maximum permit limit (99%ile):	2.3263	2.3263	2.3263
Z statistic for water quality-based monthly average permit limit (95%ile):	1.6449	1.6449	1.6449
number of days (n1) for averaging of chronic aquatic life criteria:	4	4	4
σ^2 :	0.475240	0.573462	0.109392
$\sigma^2 \cdot n1$:	0.141586	0.176974	0.028490
LTA for chronic (n1-day) aquatic life criteria:	0.52	1.1	74
$\sigma^2 \cdot n2$:	0.475240	0.573462	0.109392
Maximum Daily Limit (µg/L):	2.0	4.6	152
Average Monthly Limit (µg/L):	1.3	2.8	121

- B. Potential limits, plus 10%, based on maintaining existing concentrations of metals in the effluent, (i.e. performance-based limits) were determined using the effluent metals data collected since 1998 (a total of 50 Zn samples and 49 Pb samples).

The potential performance-based effluent limitations are based on using the 95th percentile of the log-normally distributed data for the monthly average effluent limit and the 99th percentile of the log-normally distributed data for the maximum daily effluent limit. This recommendation is consistent with our interpretation of the Department of Ecology's Permit Writer's Manual, and the EPA guidance on which Ecology's procedures are based (Appendix E in EPA/505/2-90-001, Technical Support Document for Water Quality-based Toxics Control). An additional 10% was added to these performance-based concentrations to determine potential limits that would be incorporated into the NPDES permit.

The data distribution and statistics for zinc is presented below in Figure 1, along with the hardness data distribution. Figure 2 presents the data distribution and statistics for lead and cadmium.

Figure 1. Liberty Lake Wastewater Treatment Plant, Effluent Zinc and Hardness Distribution.

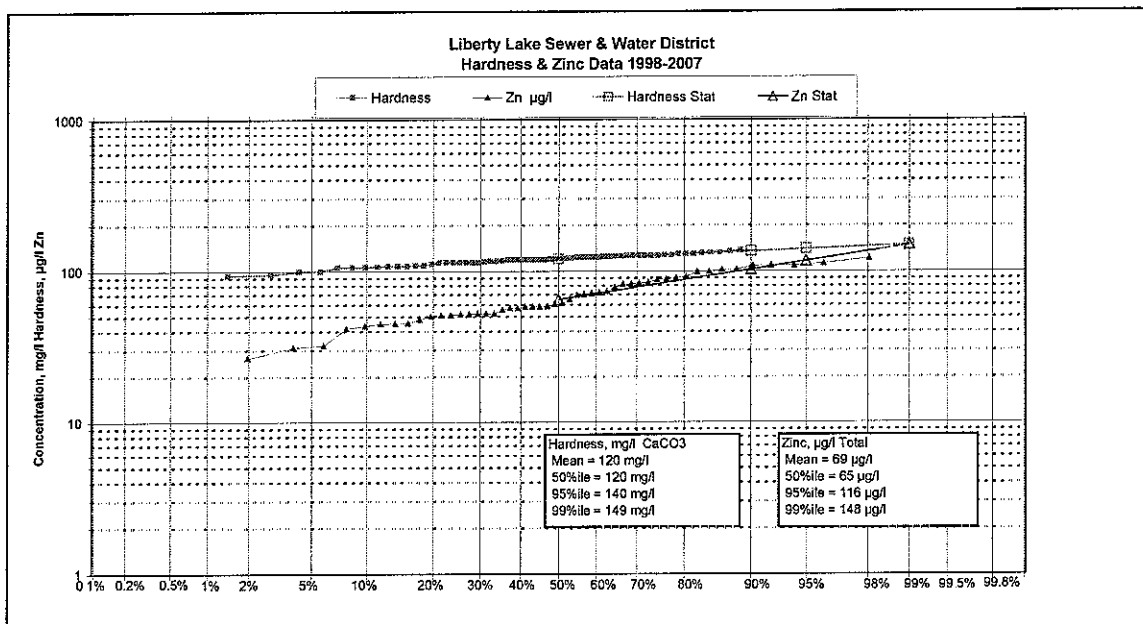
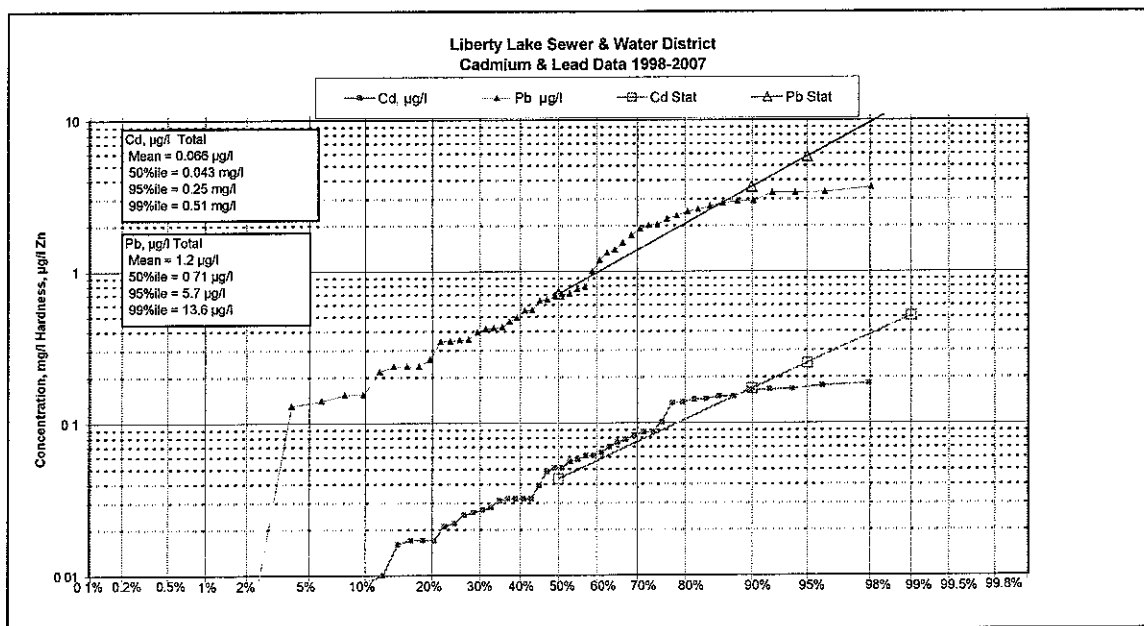


Figure 2. Liberty Lake Wastewater Treatment Plant, Effluent Lead and Cadmium Distribution.



The potential limits for lead and zinc using this performance-based determination plus 10% are presented in Table 3.

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Table 3. Potential limits, plus 10%, based on maintaining existing concentrations of metals in the effluent

	Lead, µg/L		Zinc, µg/L	
	Average Monthly	Maximum Daily	Average Monthly	Maximum Daily
95%ile for Ave Mo.	5.7		116	
99%ile for Max Day		13.6		148
10%	0.6	1.4	12	15
Potential limitation	6.3	15	128	163

The above analysis indicates that the limits based on meeting aquatic life criteria at effluent hardness at end-of-pipe are the more restrictive, and therefore should be incorporated into the permit. The recommended permit limits for these parameters is presented above in Table 1.

It can be observed in the above performance data plot, Figure 2, that the lead has exceeded the recommended proposed average monthly limits on several occasions. This observation lead to the recommendation to delay implementation of the lead limitation until the final effluent limitations become effective in 2012.

Please call if you have any questions.

Sincerely,

Mark H. Esvelt, P.E.
ESVELT ENVIRONMENTAL ENGINEERING

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